

blished ; for Man existed in Europe long before the extinction of the American Mastodon.

AN interesting innovation has been tried with great success at the National Library of Paris. It has been suggested by M. Belliard, one of the principal librarians, who was appointed the head of the Receiving Office a few months ago, to publish a monthly paper containing a descriptive list of the works which have been presented to the library, or purchased during the preceding months. The works sent by the Home Office for the *dépot légal* are not registered in that paper : there is for these a special publication. The first number has been issued, and is a lithographed 12mo pamphlet of thirty-two pages, having about two hundred entries. A copy will be presented to the great libraries abroad and in France.

MR. A. J. HARVEY, known to many as the advocate of various schemes of social improvement, now propounds a scheme for a "People's Museum of Physical Astronomy, to be erected and endowed by Government." "The object and design of a Museum of Physical Astronomy," Mr. Harvey states, "should be to popularise, familiarise, enlighten, and instruct the people in whatever can be illustrated, taught, and told, through the eye alone and without the aid or necessity of books, &c., of Physical Astronomy." It should be "a museum worthy of the intelligence and wealth of this great country, in which the whole visible universe is roughly presented to us, exhibited upon a colossal yet exact scale, and wherein the actual motions of the heavenly bodies are visible to the naked eye, wherein vast space can be spanned by the hand and great epochs of time counted with ease by the mind."

WE have received from Messrs. Blackwood and Sons an interesting lecture by Dr. Page, entitled "Recreative Science ; a Plea for Field Clubs and Science Associations." It ought to be circulated extensively among our field-clubs and other local scientific societies.

ONE of the most important of the many valuable U.S. Government documents published during a few months past is the Annual Report of the United States Geological and Geographical Survey of the Territories for 1873, as prepared by Dr. Hayden, being a volume of 730 pages, profusely illustrated with plates and sections, and exhibiting the physical geography, the sectional geology, the mining, and the natural history of the country. The volume consists of several sections. The first, that of Geology, Mineralogy, and Mining Industry, was prepared by Dr. Hayden, Mr. Marvine, Mr. Peale, and Dr. Endlich. The second embraces special reports on Palaeontology, on the Fossil Flora, by Prof. Lesquereux, and on the Vertebrates by Mr. Cope. Part third, Zoology, contains articles on the recent Invertebrates, by Lieut. Carpenter, Dr. Packard, Baron Osten-sacken, Mr. Ulke, Dr. Hagen, Mr. S. J. Smith, Prof. Verrill, and Mr. William G. Binney. Part fourth, upon the Geography and Topography, is from the pen of Mr. James T. Gardner, geographer of the expedition. There is also an appendix by Mr. A. R. Marvine.

THE Rev. G. H. Hopkins gives the following method for fixing the curves which steel filings take when under the action of a bar magnet. The filings having been prepared so as to be as nearly the same size as possible, and that size very minute, are pound into a mortar, and a small quantity of finely powdered resin is added ; these are stirred together until the two substances are completely mixed, and then, considerable pressure being exerted upon the pestle, they are rubbed until the resin adheres to the filings in a very fine coating. The filings can then be sprinkled as usual, and the curves formed. It is best (after the curves are formed) to heat the plane surface, glass, paper, or wood, according to convenience, over a stove or in an

oven, which easily allow it to be sufficiently as well as uniformly heated. For projecting the curves on a screen, the following, we believe, is a very effective method. Cover the glass with thin gum-water, allow it to dry perfectly ; obtain the curves on the dry gummed surface ; finally, breathe on the plate : the gum is thereby softened and the curve permanently fixed. Substituting corresponding shaped pieces of paper for the magnets (a pin-hole can be used to indicate the N. pole), the curves can be covered with a second plate of glass, and thus preserved as an ordinary lantern slide.

A VERY satisfactory report has been issued for the past year by the committee of the Devon and Exeter Albert Memorial Museum, &c. Several valuable additions in natural history have been made to the Museum, and in the reference library there has been an addition of eighteen per cent. in the issue of works on science and art. The institution as a whole continues to work so well that more room and better accommodation are urgently demanded.

THE additions to the Zoological Society's Gardens during the past week include a Grey-cheeked Monkey (*Cercopithecus abigena*), a Marsh Ichneumon (*Herpestes paludosus*), an Angolan Vulture (*Gypohierax angolensis*) from W. Africa, presented by the late Mr. H. Ansell ; a Syrian Bear (*Ursus syriacus*) from Western Asia, presented by Mr. W. Kirby Green ; an Australian Cassowary (*Casuarius australis*) from Australia, presented by Mr. E. P. Ramsay ; a Black-necked Stork (*Xenorhynchus australis*) from Australia, presented by Mr. C. Moore ; two Egyptian Geese (*Chenopex aegyptiacus*) from W. Africa, presented by Mr. R. B. N. Walker ; three Chestnut-eared Finches (*Amadina castanotis*) from Australia, presented by Mrs. G. French Angas ; a Common Raccoon (*Procyon lotor*) from N. America, presented by Mr. Wesson ; a Reeves's Muntjac (*Cervulus reevesi*) born in the Gardens.

SCIENTIFIC SERIALS

The American Journal of Science and Arts, May.—The first article is a continuation (No. 5) of a series of notices on recent earthquakes, by Prof. Rockwood. The second is an inquiry by Prof. J. D. Dana on Dr. Koch's evidence with regard to the contemporaneity of Man and the Mastodon in Missouri. (See Note, p. 96.)—Mr. Carey Lea communicates a short note on the influence of colour upon reduction of light, and Prof. Rowland a description of a new diamagnetic attachment to the lantern.—The geological articles are the Primordial Strata of Virginia, by W. Fontaine, and the Age of the Southern Appalachians, by F. H. Bradley.—The contributions from the Physical Laboratory of Harvard College are on the construction of Gaugain's galvanometer, on a new form of magneto-electric engine, by W. R. Morse, and some remarks by S. Newcomb on the Transit of Venus.

The Journal de Physique théorique et appliquée, April 1875, contains the following original papers :—Researches on thermo-diffusion, by J. Violle.—Determination of the velocity of light and of the sun's parallax, by M. A. Cornu.—On some polarisation experiments, by M. Bertin (last paper).—On an apparatus destined to get glass penetrated by the electric spark, by MM. Terquem and Trannin.—The number contains also several abstracts from papers taken from other serials.

Der Naturforscher,¹ March 1875.—From this part we note the following papers :—On the influence of the density of metals upon their magnetisation ; new researches made by Herr Börnstein with iron, nickel, and cobalt.—On the meteorite of Roda (in the Spanish province of Huesca), by Herren Tschermark and Lang.—On the genetic classification of the flora of Australia, by C. von Ettinghausen.—On the shooting stars observed on Nov. 13 and Dec. 10, 1874, at the Toulouse Observatory, under the direction of M. Gruey.—On vegetable mucus, by Herren Kirchner and Tollens.—On the action of hydrochloric acid upon lead-antimony alloys, by Herr H. v. d. Planitz.—On the behaviour of hydrocarbons under restricted oxidation, by M. Berthelot. —On

the star system 61 Cygni ; discussion of M. Flammarion's latest papers on the subject.—On the repulsive power of comets, by G. V. Schiaparelli.—On the respiration of Fungi, by Herr Müntz.—On over-saturated solutions and the dissociation of salts in solution, by A. Tscherbatschew.—On forests, the courses of rivers, and atmospheric moisture, by L. Fautrat.—On the radiation of the sun ; observations made at the Observatory of Montsouris, near Paris, by Marié-Davy.—On the time of reaction of the sense of taste at the tip of the tongue, by Herrn M. v. Vintschgrau and J. Hönigschmid.—On colouring matters and the sensitiveness towards light of several silver salts, by H. W. Vogel.—On the decomposition of vegetable xanthophyll by light, by J. Wiesner.—On the circulation of ammonia in the atmosphere, by Herr Al. Schloesing.—On some glacier-phenomena in the Bavarian high plateaus ; a communication made to the Munich Academy, by Herr Zittel.—Researches on the process of digestion in the intestines of sheep, by Eugen Wildt.—Some researches on magnetism, by M. Bouthy.—On the antiseptic properties of salicylic acid ; an extract from the *Journal für praktische Chemie*, by Herr Kolbe.—On the direct observation of the atmosphere of Venus, by C. S. Lyman ; results of these observations show the horizontal refraction of Venus' atmosphere to be 44' 5" ; in 1866 it had been determined at 45' 3", and Mädler in 1849 had found it 43' 7". Mr. Lyman measured the diameter of the planet six times on Dec. 10 (the day after the transit), and found it on the average to be 63" 1" ; the average of eleven measurements on Dec. 11 was 63" 75".—On the electric action of a thermal source at Baden, Switzerland, by Herren Thury and Alb., Munich.

Zeitschrift der Oesterreichischen Gesellschaft für Meteorologie, March 15.—On the relation between differences of atmospheric pressure and velocity of wind, according to the theories of Ferrel and Colding, by Dr. Hann. The author begins with a review of the two theories of storms, the older of which has been accepted chiefly in Germany, the other in America and the Northern States of Europe. According to the former, whirlwinds are formed mechanically by different streams of air meeting, and centrifugal force causes the central depression. The more modern theory regards a local depression as the first condition, causing an indraught resulting in a whirlwind through the earth's rotation. The primary depression is held to follow condensation of vapour. Probably there is something right in each of these views. Eddies can, doubtless, be formed by currents meeting at certain angles, but the direction of rotation would not be invariable in each hemisphere. Besides, the mechanical resistance to the progress and continuance of a whirlwind so formed would, without inconceivably favourable conditions, be far too great to be overcome. Dr. Hann recognises the part played by vapour in storms, but thinks that many meteorologists rely too much on it in their need, and points to the works of Hopkins and Laughton for instances of this partiality. He believes that the greater part of the low pressure which accompanies storms must be explained by mechanical laws, and that the local differences of pressure in a cyclone or even in a straight-blowing current (if such there be) follow from movements of the air. Condensation may cause a depression, and that depression we know may cause winds which produce a depression ten or fifteen times greater. Prof. Ferrel endeavours to show mathematically that depressions are due to centrifugal force and the earth's rotation. Colding considers tropical hurricanes as true whirlwinds, and his values for pressure from centre to edge reckoned from this hypothesis agree with observation. Now, there is no reason why centrifugal force should not act in spirally-whirling storms in relation to radius and velocity. The earth's rotation adds to the effect of this force, and the result is a diminution of pressure towards the centre on the earth's surface. The enormous extent of some minima is thus explained, which an ascending current and precipitation fail to account for. Dr. Hann proceeds to develop mathematically the theories of Ferrel and Colding, and gives the following formula (1) for finding the barometric gradient :—

$$\Delta B = \frac{l}{287.4} \cdot \frac{B}{T} (2n \sin \phi + u)v$$

where B is the height of the barometer at point of observation, T the absolute temperature (i.e. $273^\circ + t$), l = 50 geographical miles, u the angular velocity of rotation, n the angular velocity of the earth's rotation, ϕ the latitude, and v the distance traversed in unit of time. In this equation it is assumed that the circulation is simple, without friction, and not inducing new masses of air.—In the *Kleinere Mittheilungen* we have an article on Baumhauer's Meteorograph, and some extracts from a letter of Prof.

Mohn, dated 21st December last, on cyclonic minima. In this letter the writer states that having called the attention of Herr Guldberg to the fact that Colding's point of view is quite different from that of the new school of meteorologists, that gentleman worked out his own formula and found as much agreement between his results and observations of an Antilles hurricane as Colding found by his method. The factors taken into consideration by Herr Guldberg were, barometric gradient, rotation of the earth, centrifugal force, and friction of the air. Prof. Mohn believes the central minimum to be a mechanical effect of rotation. He discovered lately that Prof. Ferrel had worked with similar formulae and had derived therefrom similar results, but he intends to pursue his task, and believes it will be ascertained that relations of pressure are in great part functions of movement.

The Bulletin Mensuel de la Société d'Acclimatation de Paris for February gives the customary yearly summary by M. Quihou of the principal experiments carried out in the Jardin d'Acclimatation in the Bois de Boulogne during 1874, and of the most important plants cultivated there.—M. Jeannel gives a report on various experiments conducted by him during the year in the Jardin de Luxembourg with the object of testing the value of mineral manures in horticulture.—The new kind of silkworm, *Attacus Yama-mai*, is the subject of a long paper by M. F. A. Bigot.—An attempt made by M. Victor Fleury to acclimatise the Siberian rabbit in France has not entirely succeeded, but excellent results have ensued in the crossing of this race with the common grey rabbit of the country.—The value of the *Eucalyptus globulus* in correcting the unhealthiness of marshy and other lands is proved by its effect in certain parts of Algeria, where, in the neighbourhood of Lake Fezzara, in Constantine, a large area of land hitherto noted for its insalubrity has greatly improved since the plantation of a large number of these trees.

Annali di Chimica applicata alla Medicina, Feb. and March, 1875.—These numbers contain the following papers :—On diastase and some preparations from malt, by H. Duquesnel.—On croton-chloral, by Engel.—On a carbonic solution of tribasic phosphate of lime, by Chevrier.—On a glycerine solution of iodide of potassium, by C. O. Barberis.—On the ventilation of closed localities, by G. P.—On vinic alcohol, aldehyde, and ethers : experimental researches made in the Physiological Laboratory of Padua, by Drs. P. Albertoni and F. Lussana.—On fermentations and fermentations in the human organism, by A. Pavia.—On some fermentation processes by J. Macagno.—On a simple, easy, quick, and certain means to distinguish in mankind real death from apparent, by Dr. A. Monteverdi. This consists of injecting under the skin an aqueous solution of ammonia, and watching the appearance of the blister produced.—On blood fibrine and the formation of a substance analogous to ordinary albumen, by A. Gautier.—Researches on the parasite that produces whooping-cough, by Dr. Lebrerich.—On apomorphia, by G. Hirne.—A note on cremation, by the editor of the *Annals*, Dr. G. Polli.

The Gazzetta Chimica Italiana, fasc. iii. 1875, contains the following papers :—On the action of acetyl chloride upon santonine and santonic acid, by F. Sestini.—On some derivatives from alaphatolic acid, by C. Colombo and P. Spica.—On the formation of sugar in fruits, by M. Mercadante.—On a new method of determining the tannic acid contained in wines, by A. Carpané.

SOCIETIES AND ACADEMIES LONDON

Linnean Society, May 6.—Anniversary Meeting.—Dr. G. J. Allman, F.R.S., president, in the chair.—The officers of the Society were elected for the ensuing year as follows, viz. :—President, Dr. G. J. Allman, F.R.S. ; Treasurer, Dr. J. Gwyn Jeffreys, F.R.S. ; Secretaries : T. Curey, F.R.S., and St. George Mivart, F.R.S. ; and as Members of the Council : Dr. J. D. Hooker, Pres. R.S. ; Dr. J. G. Jeffreys, F.R.S. ; Major-General Scott, C.B. ; R. B. Sharpe, and Chas. Stewart, in the place of J. Miers, F.R.S. ; T. P. Pascoe, Major-General Strachey, F.R.S., Dr. H. Trimen, and the late D. Hanbury, F.R.S. The President then delivered an address on the History and Development of the Infusoria.

Anthropological Institute, May 25.—Col. A. Lane Fox, president, in the chair.—Mr. T. G. B. Lloyd read papers on